**Seminar in Freshwater Sciences: Human and Ecosystem Health**  
FRSHWTR 690/901

Instructor:  
Michael J. Carvan, Ph.D.   
Time: 5:30-7:10  
carvanmj@uwm.edu  
Place: School of Freshwater Sciences, Room TBD

There will be one ALL-DAY field trip on 9/18 to Green Bay

2 credits

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<th>Week</th>
<th>TOPICS</th>
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| **Week 1** | 9/11 | Dr. Carvan lecture: Background for paper discussion  
Comprehensive Environmental Response, Compensation, and Liability Act—Superfund Program background: policy, history, purpose, limitations |
| **Week 2** | 9/18 | Field Trip to Green Bay  
meet at SFS 8:00 AM, return around 9:00 PM |
| **Week 3** | 9/25 | **Research week—library and online**  
Prepare for discussion topics |
| **Week 4** | 10/2 | Review and discussion of field trip  
Dr. Carvan paper discussion  
Student Team 1 lecture: Background for paper discussion—Superfund related topic TBD |
| **Week 5** | 10/9 | Student Team 1 paper discussion  
Invited speaker TBD hosted by Student Team 1 |
| **Week 6** | 10/16 | Discussion of invited speaker led by Student Team 1  
Student Team 2 lecture: Background for paper discussion—Superfund related topic TBD |
| **Week 7** | 10/23 | Student Team 2 paper discussion  
Invited speaker TBD hosted by Student Team 2 |
| **Week 8** | 10/30 | Discussion of invited speaker led by Student Team 2  
Student Team 3 lecture: Background for paper discussion—Superfund related topic TBD |
| **Week 9** | 11/6 | Student Team 3 paper discussion  
Invited speaker TBD hosted by Student Team 3 |
Week 10  
Research week—library and online  
11/13  
Prepare for final team presentation

Week 11  
Discussion of invited speaker led by Student Team 3  
11/20  
Student Team 4 lecture: Background for paper discussion—Superfund related topic TBD

Week 12  
Student Team 4 paper discussion  
11/27  
Invited speaker TBD hosted by Student Team 4

Week 13  
Discussion of invited speaker led by Student Team 4  
12/4  
Presentation of team projects or reports

Week 14  
Presentation of team projects or reports (continued)  
12/11

TEXT
There is no required text for this course. Extensive reading material will come from the published literature.

BROAD COURSE GOALS AND OBJECTIVES

The Superfund program is designed to fund the cleanup of sites contaminated with hazardous substances and pollutants. It was established as the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The objective of the course is to have students explore the interactions between human and ecosystem health by examining the Superfund Program with special emphasis on the Lower Fox River/Green Bay and Milwaukee Estuary Areas of Concern and associated Superfund sites. Topic areas will include 1) policy, litigation, and community involvement; 2) environmental remediation; 3) impacts on ecosystems; 4) impacts on human health; and 5) chemicals of concern molecular mechanisms of action.

Learning Objectives:

1. Develop an understanding of the Superfund program, with specific emphasis on the regional Areas of Concern in the Lower Fox River/Green Bay and Milwaukee Estuary systems.
2. Understand the relationship between ecosystem health and the risks for human health impacts.
3. Further develop skills necessary for communicating highly complex relationships to peers and to the public.
**EVALUATION:**
Final course grade will depend on your performance in each of the following areas.

- **Class participation** 25%
- **Topic area presentation** 50%
  - Lecture, Paper discussions,
  - Hosting invited Speaker,
  - Leading discussion of speaker presentation
- **Final Team Project** 25%

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**Assignments:**
Student teams will select papers (at least two), with approval by the Instructor, from the peer-reviewed literature that focus on one of the following topic areas: 1) environmental remediation; 2) impacts on ecosystems; 3) impacts on human health; and 4) chemicals of concern molecular mechanisms of action. The students will be responsible for providing a lecture that provides background information necessary for understanding the selected papers, leading a discussion of the papers, hosting an invited speaker with real-world experience in the Lower Fox River/Green Bay or Milwaukee Estuary Areas of Concern, and leading class discussion of the topics covered during the presentation.

**Lecture:**
Student teams will deliver a 45-minute lecture that provides valuable background information that the class needs to understand the peer-reviewed papers for discussion. The lecture is expected to be comprehensive. The format is flexible but it is expected that much of the information will be delivered by PowerPoint presentation.

**Paper discussion:**
Students will lead a 45-minute class discussion of the selected peer-reviewed papers. The papers should cover areas relevant to the Lower Fox River/Green Bay or Milwaukee Estuary Areas of Concern but these areas don’t necessarily have to be focus of the paper.
Discussion should focus on how the papers relate to the Lower Fox River/Green Bay or Milwaukee Estuary Areas of Concern.

**Host invited speaker:**
Student teams will choose and invite an external speaker with extensive experience working within the Lower Fox River/Green Bay or Milwaukee Estuary Areas of Concern within the chosen topic area. They will introduce the invited speaker and lead discussion following the presentation.

**Class discussion of speaker presentation:**
Student teams will lead an in-class discussion of the presentation by the invited speaker and how it effects their understanding of the Lower Fox River/Green Bay or Milwaukee Estuary Areas of Concern.

**Team Project**
Throughout the semester, the class will prepare a presentation that will summarize the interactions between human and ecosystem health through examination of the Superfund Program with special emphasis on the Lower Fox River/Green Bay and Milwaukee Estuary Areas of Concern and associated Superfund sites. The format of this presentation is flexible and the audience is their grandmother.

**Participation expectations:**
The background presentations are peer evaluated and participation in these activities is mandatory. The majority of class time is discussion and information based upon readings and invited speakers, and is mandatory. The content and format for the class is flexible by necessity to accommodate learners from diverse fields and with different learning styles.

**Time Investment:**
In comply with the Higher Learning Commission requirement and the US Department of Education, the course syllabus will provide information on the investment of time by an average student to achieve the learning goals in the course.

The amount of time that an average student should expect to spend on this class, in order to achieve the learning goals of the course, is given below:

Time in class discussion: 30 hours
Time taking exams: 0
Time completing assignments: 46 hours
  - Student team background lecture: 15
  - Preparation and leading paper discussions: 10
  - Preparation and leading discussion of invited speaker presentation: 6
  - Class project: 15
Time spent reading materials: 20 hours
Time in laboratories: 0

The total number of hours: 96 hours (48 hours/credit)
Syllabus Links

1. **Students with disabilities.** Notice to these students should appear prominently in the syllabus so that special accommodations are provided in a timely manner. [http://uwm.edu/arc/](http://uwm.edu/arc/)

2. **Religious observances.** Accommodations for absences due to religious observance should be noted. [http://www4.uwm.edu/secu/docs/other/S1.5.htm](http://www4.uwm.edu/secu/docs/other/S1.5.htm)

3. **Students called to active military duty.** Accommodations for absences due to call-up of reserves to active military duty should be noted.
   - Students: [http://uwm.edu/active-duty-military/](http://uwm.edu/active-duty-military/)

   (Editorially Revised, 03/25/09)
   (Editorially Revised, 12/06/2016)

4. **Incompletes.** A notation of "incomplete" may be given in lieu of a final grade to a student who has carried a subject successfully until the end of a semester but who, because of illness or other unusual and substantiated cause beyond the student's control, has been unable to take or complete the final examination or to complete some limited amount of term work. [https://www4.uwm.edu/secu/docs/other/S_31_INCOMPLETE_GRADES.pdf](https://www4.uwm.edu/secu/docs/other/S_31_INCOMPLETE_GRADES.pdf)

5. **Discriminatory conduct (such as sexual harassment).** Discriminatory conduct will not be tolerated by the University. It poisons the work and learning environment of the University and threatens the careers, educational experience, and well-being of students, faculty, and staff. [https://www4.uwm.edu/secu/docs/other/S_47_Discriminatory_Policy.pdf](https://www4.uwm.edu/secu/docs/other/S_47_Discriminatory_Policy.pdf)

6. **Academic misconduct.** Cheating on exams or plagiarism are violations of the academic honor code and carry severe sanctions, including failing a course or even suspension or dismissal from the University. [http://uwm.edu/academicaffairs/facultystaff/policies/academic-misconduct/](http://uwm.edu/academicaffairs/facultystaff/policies/academic-misconduct/)

7. **Complaint procedures.** Students may direct complaints to the head of the academic unit or department in which the complaint occurs. If the complaint allegedly violates a specific university policy, it may be directed to the head of the department or academic unit in which the complaint occurred or to the appropriate university office responsible for enforcing the policy. [https://www4.uwm.edu/secu/docs/other/S_47_Discriminatory_Policy.pdf](https://www4.uwm.edu/secu/docs/other/S_47_Discriminatory_Policy.pdf)

8. **Grade appeal procedures.** A student may appeal a grade on the grounds that it is based on a capricious or arbitrary decision of the course instructor. Such an appeal shall follow the established procedures adopted by the department, college, or school in which the course resides or in the case of graduate students, the Graduate School. These procedures are available in writing from the respective department chairperson or the Academic Dean of the College/School. [http://www4.uwm.edu/secu/docs/other/S28.htm](http://www4.uwm.edu/secu/docs/other/S28.htm)

9. **LGBT+ resources.** Faculty and staff can find resources to support inclusivity of students who identify as LGBT+ in the learning environment. [http://uwm.edu/lgbtrc/](http://uwm.edu/lgbtrc/)

10. **Other.** The final exam requirement, the final exam date requirement, etc. [http://www4.uwm.edu/secu/docs/other/S22.htm](http://www4.uwm.edu/secu/docs/other/S22.htm)

(Editorially Revised, 8/26/11; 8/21/15; 5/4/17)